PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Divisional Application of	)	
	)	FOR: SYSTEM AND METHOD FOR
Rob NEEPER	)	TREATMENT OF SAMPLES ON
	)	SOLID SUPPORTS
Serial No.: Unknown	)	
	)	Group
Filed: Herewith	)	Art Unit: UNKNOWN
Serial No.: 09/549,958	)	
Filed: April 14, 2000	)	
	)	

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Attn: Examiner Patricia Bex

Dear Madam:

This Preliminary Amendment accompanies the filing of a Rule 60 Divisional Application relating to U.S. Serial No. 09/549,958 filed on April 14, 2000.

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail with Express Mail Label No. EL732984565US addressed to: Commissioner for Patents, P.O. Box 2327, Arlington, VA 22202 on:

January 28, 2002
(Mailing Date)

Melissa J. Leffler
(Typed Name)

(Signature)

January 28, 2002
(Date of Signature)

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Please amend the Divisional application as follows:

IN THE SPECIFICATION

On page 1, line 5, before "This application is related to..." insert -- This application is a divisional application of application 09/549,958 filed April 14, 2000.--

IN THE CLAIMS

Please cancel Claims 1-37 without prejudice.

REMARKS

The Applicants elected claims 1-32 and 38 in response to a restriction requirement issued by the Examiner by telephone interview on January 10, 2002. At that time the Applicants reserved the right to file a divisional application with the remaining claims 33-37 and 39-65. The Applicants request that claims 39-65 be examined in this divisional application.

Respectfully submitted,

Dated: January 28, 2002

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Docket No.: 6444-PA04D2

VERSION OF SPECIFICATION AND CLAIMS INDICATING CHANGES

On page 1, starting on line 5.

This application is a divisional application of application 09/549,958 filed April 14, 2000. This application is related to applications Serial No. 09/_____, entitled SYSTEM AND METHOD FOR TREATMENT OF SAMPLES ON SOLID SUPPORTS, and Serial No. 09/_____, SYSTEM AND METHOD FOR DISPENSING SOLUTION TO A MULTI-WELL CONTAINER,, each having the same filing date as, and assigned to the assignee of, the present application.

Delete claims 1-38.

SYSTEM AND METHOD FOR TREATMENT OF SAMPLES ON SOLID SUPPORTS

RELATED APPLICATIONS

This application is a divisional application of application 09/549,958 filed April 14, 2000. This application is related to applications Serial No. 09/_____, entitled SYSTEM AND METHOD FOR TREATMENT OF SAMPLES ON SOLID SUPPORTS, and Serial No. 09/_____, SYSTEM AND METHOD FOR DISPENSING SOLUTION TO A MULTI-WELL CONTAINER,, each having the same filing date as, and assigned to the assignee of, the present application.

FIELD OF THE INVENTION

The invention relates to a system and method for automated treatment of chemical compounds or biological materials on solid supports, and more specifically, a system and method for automated purification, elution, cleavage, transfer, concentration and/or evaporation of biological or chemical samples on solid supports.

BACKGROUND OF THE INVENTION

In recent years, the pharmaceuticals industry has devoted significant resources to finding ways to cut the time required for identification and validation of lead drug candidates. Disciplines that have arisen to address this need include high-throughput screening and combinatorial chemistry. Using combinatorial methods, libraries made up of large numbers of compounds are randomly or semi-randomly synthesized, then evaluated using high-throughput screening, looking for biological activity or chemical reactions. The availability of solid-phase supports, e.g., resin beads, balls, disks or tubes, for organic synthesis has contributed significantly to the ability to create large combinatorial libraries, making it possible to synthesize

CLAIMS

39. An automated method for processing of samples on solid supports, the method comprising:

(a) loading each sample and solid support into a sample well of a plurality of wells in a sample/collection container with one sample and solid support combination per sample well;

(b) loading a plurality of sample/collection containers onto a rotor position on a centrifuge rotor within an openable centrifuge chamber;

(c) rotating the centrifuge rotor to position a first sample/collection container below a dispensing head having a plurality of dispensing tips, with one dispensing tip corresponding to each well of the plurality of wells.;

(d) dispensing a processing solution into the plurality of wells of the first sample/collection container;

(e) rotating the centrifuge rotor to position a second sample/collection container below the dispensing head;

(f) under computer control, dispensing the processing solution into the plurality of wells of the second sample/collection container;

(g) repeating steps (e) and (f) until all sample/collection containers of the plurality have received the processing solution;

(h) under computer control, rotating the centrifuge rotor to spin the plurality of sample/collection containers to complete the processing of the samples; and

(i) halting the centrifuge rotor after completion of the processing and unloading the sample/collection containers.

40. The method of Claim 39, further comprising, during step (h), heating the sample/collection containers with a heat source to enhance the processing of the samples.

41. The method of Claim 40, further comprising, prior to step (b), placing a heat plate at each rotor position for uniform distribution of heat from the heat source.

42. The method of Claim 40, further comprising detecting the temperature of at least one heat plate and providing feedback for control of the heat source.

43. The method of Claim 39, further comprising reducing a pressure within the centrifuge chamber using a plurality of vacuum pumps.

44. The method of Claim 39, wherein each sample/collection container has a unique identifier, the method further comprising after step (b), under computer control, reading the unique identifier and storing the unique identifier in a computer memory.

45. The method of Claim 44, wherein the unique identifier is a bar code disposed on the sample/collection container.

46. The method of Claim 39, wherein the wherein the sample/collection container comprises a separable assembly of a sample container and a collection container, each container have a plurality of wells formed therein, wherein the sample container has a plurality of drains connected to the wells, the method further comprising, during step (h), transferring, under centrifugal force, a solution from each well in the sample container into a corresponding well of the collection container, wherein the solid supports remain in the wells of the sample container.

48. The method of Claim 47, wherein each well in the sample container is configured as a column with a plurality of porous plugs disposed therein for retaining the solid support and a biological sample therebetween.

49. The method of Claim 47, wherein the sample container and the collection container each have a unique identifier disposed thereon.

50. The method of Claim 39, wherein the solid supports are selected from the group consisting of loose beads, tubes, pins, crowns, disks, balls, cubes, blocks, and porous containers containing resin particles or beads.

51. The method of Claim 39, wherein the sample/collection container comprises a plurality of wells, each well having a first inner diameter at an upper portion and a second inner diameter smaller than the first inner diameter at a lower portion, wherein the second inner diameter is smaller than the solid support so that the solid support is retained in the well above the lower portion.

52. The method of Claim 39, wherein the sample/collection container comprises a plurality of wells, each well having a bottom, an inner diameter adapted for receiving the solid support, and at least one protrusion extending radially into the well for restricting the inner diameter of the well to prevent the solid support from dropping to the bottom of the well.

53. The method of Claim 52, wherein the at least one protrusion comprises a rib, ridge, ring or tab.

54. The method of Claim 39, wherein the centrifuge rotor operates at a plurality of speeds, and step (h) comprises rotating the centrifuge rotor at a first

speed for cleaving the samples from the solid supports and at a higher second speed for transfer and/or concentration of a cleaved sample.

55. The method of Claim 54, wherein the first speed is selected to minimize creep.

56. The method of Claim 55, wherein the first speed is on the order of 20 to 30 r.p.m.

57. The method of Claim 54, wherein the second speed is selected to reduce bumping.

58. The method of Claim 57, wherein the second speed is on the order of 800 r.p.m.

59. The method of Claim 39, wherein the steps of dispensing comprise:
pumping a solution from a solution source into a reservoir;
pumping the solution from the reservoir through a plurality of tubes, wherein one tube corresponds to each dispensing tip of the plurality of dispensing tips.

60. The method of Claim 59, wherein further comprising measuring the amount of solution pumped into each tube.

61. The method of Claim 59, further comprising purging the plurality of tubes and plurality of dispensing tips with a gas after the solution has been dispensed.

62. The method of Claim 39, wherein the steps of dispensing further comprises, under computer control, detecting alignment of the dispensing head with the sample/collection container.

63. The method of Claim 39, wherein the sample is a chemical compound and the solution comprises a cleaving solution.

64. The method of Claim 39, wherein the sample is a biological sample containing DNA and the solution comprises a washing or eluting solution.

65. The method of Claim 64, wherein the sample/collection container comprises a separable assembly of a sample container and a collection container, and further comprising the step after step (i) of removing the collection container containing waste solution and replacing the collection container with a clean collection container, and repeating steps (b) through (h) until purified DNA is transferred into the clean collection container.